

CLAIMS

1. Bioreactor for cultivating organic material, comprising a receiving device for receiving and/or retaining the organic material, wherein the receiving device is permeable for passing through a nutrient medium, and comprising  
a flow generating device, by means of which the nutrient medium can be put into a flow through the receiving device,  
**c h a r a c t e r i z e d** in that
  - the receiving device has at least two partition wall elements (11), by which a receiving space (13) adapted for receiving the organic material is enclosed, and
  - the partition wall elements (11) are on the one hand permeable to the nutrient medium and on the other hand substantially impermeable to the organic material.
2. Bioreactor according to claim 1,  
**c h a r a c t e r i z e d** in that  
the partition wall elements (11) have a membrane.
3. Bioreactor according to claim 1,  
**c h a r a c t e r i z e d** in that  
the partition wall elements (11) have a fabric.
4. Bioreactor according to any one of claims 1 to 3,  
**c h a r a c t e r i z e d** in that
  - the receiving device has a carrier element (12), which is adapted for an adhesion of the organic material, and
  - the carrier element (12) is permeable to the nutrient medium.

5. Bioreactor according to claim 4,  
**characterized** in that  
the carrier element (12) has a three-dimensional  
structure, in particular it is designed as three-  
dimensional fabric or as a porous material.
6. Bioreactor according to claim 4 or 5,  
**characterized** in that  
the carrier element (12) includes a textile carrier  
material.
7. Bioreactor according to claim 6,  
**characterized** in that  
- the textile carrier material is surface-treated and  
- a bio-compatible surface is formed with a structure  
adapted for an adhesion of the organic material.
8. Bioreactor according to any one of claims 1 to 7,  
**characterized** in that  
it is constructed as a flat cell (9), in which the  
receiving device is preferably designed circularly.
9. Bioreactor according to any one of claims 1 to 7,  
**characterized** in that  
it is constructed as tube cell (7), in which the  
partition wall elements (11) are designed tubularly.
10. Bioreactor according to claim 9,  
**characterized** in that  
the tubular partition wall elements (11) are arranged  
paraxially, preferably coaxially to each other.
11. Bioreactor according to any one of claims 8 to 10,

characterized in that cells (7) are arranged as modules in one flow direction in a parallel and/or serial fashion.

12. Bioreactor according to any one of claims 1 to 11,

characterized in that a control device is provided, by means of which the flow generating device, a temperature adjusting unit, a gasing unit, a degasing unit and/or further supply units can be controlled and/or regulated.

13. Bioreactor according to claim 12,

characterized in that

- a sensor device is arranged in one flow direction after the receiving space (13), by means of which physical and chemical values of state of the nutrient medium can be determined and
- the sensor device is connected to the control device.

14. Bioreactor according to any one of claims 1 to 13,

characterized in that

- a closed, in particular dismountable housing is provided, in which the receiving device is arranged, and
- at least one feed and one discharge are provided for the nutrient medium as well as an access for introducing and removing the organic material.

15. Method for cultivating organic material, wherein

- a nutrient medium is at least temporarily put into a flow,
- the organic material is retained in or at a receiving device and
- the nutrient medium is passed through the receiving device,

**c h a r a c t e r i z e d** in that

- the organic material is arranged in a receiving space (13), which is enclosed by two partition wall elements (11) that are permeable to the nutrient medium, but substantially impermeable to the organic material.

16. Method according to claim 15,

**c h a r a c t e r i z e d** in that

prior to an inoculation or introduction of the organic material into the receiving device this is sterilized.

17. Method according to claim 15 or 16,

**c h a r a c t e r i z e d** in that

prior to a removal of the cultivated organic material from the receiving device a medium, in particular an enzyme, is introduced for detaching adhered organic material.

18. Method according to any one of claims 15 to 17,

**c h a r a c t e r i z e d** in that

the direction of flow of the nutrient medium that is passed through the receiving device is changed during the cultivation of the organic material.

19. Method according to any one of claims 15 to 18,

**c h a r a c t e r i z e d** in that

a chemical and/or physical state of the nutrient medium, in particular a material composition, a stoichiometrical composition, temperature, pressure or rate of flow, are specifically changed in the course of the cultivation.

20. Method according to any one of claims 15 to 18,

**c h a r a c t e r i z e d** in that

- at least after passing the nutrient medium through the receiving device chemical and/or physical values of state of the nutrient medium are measured,
- the measured values of state are recorded and analysed in a control device, and
- the measured values of state are employed for controlling and/or regulating the course of the cultivation of the organic material.

21. Method according to any one of claims 15 to 20

**c h a r a c t e r i z e d** in that

- the nutrient medium is passed through a number of receiving devices, which are arranged to each other in a parallel and/or serial fashion.